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# Environmental Restoration
# RFCA Standard Operating Protocol
# For Routine Soil Remediation
# Draft FY04 Notification #04-08
# IHSS Group 400-1


**November 2003**



1/14

# Environmental Restoration
# RFCA Standard Operating Protocol
# For Routine Soil Remediation
# Draft FY04 Notification #04-08
# IHSS Group 400-1

Approval received from the Colorado Department of Public Health and Environment

(  )

Approval letter is contained in the Administrative Record

**November 2003**

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## ACRONYMS

| | |
|---|---|
| AL | action level |
| COC | contaminant of concern |
| DOE | U S Department of Energy |
| EDDIE | Environmental Data Dynamic Information Exchange |
| ER | Environmental Restoration |
| ER RSOP | Environmental Restoration RFCA Standard Operating Protocol |
| FY | Fiscal Year |
| IA | Industrial Area |
| IASAP | Industrial Area Sampling and Analysis Plan |
| IHSS | Individual Hazardous Substance Site |
| nCi/g | nanocuries per gram |
| PAC | Potential Area of Concern |
| PCOC | potential contaminant of concern |
| POC | Point of Compliance |
| POE | Point of Evaluation |
| RCRA | Resource Conservation and Recovery Act |
| RFCA | Rocky Flats Cleanup Agreement |
| RFETS | Rocky Flats Environmental Technology Site |
| RSOP | RFCA Standard Operating Protocol |
| SSRS | Subsurface Soil Risk Screen |
| UBC | Under Building Contamination |
| VOC | volatile organic compound |
| WRW | Wildlife Refuge Worker |

## 1.0 INTRODUCTION

This Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2003a) Fiscal Year (FY) 04 Notification includes the notification to remediate Individual Hazardous Substance Sites (IHSSs), Potential Areas of Concern (PACs), and Under Building Contamination (UBC) Sites at the Rocky Flats Environmental Technology Site (RFETS) Industrial Area (IA) during FY04 The purpose of this Notification is to invoke the ER RSOP for IHSS Group 400-1 Activities specified in the ER RSOP are not reiterated here, however, deviations from the ER RSOP are included where appropriate

Soil with contaminant concentrations greater than the RFCA Action Levels (ALs), or as indicated by the Subsurface Soil Risk Screen (SSRS) and associated debris will be removed in accordance with RFCA (DOE et al 2003) and the ER RSOP (DOE 2003a)

IHSS Group 400-1 is shown on Figure 1, and the proposed remediation site covered under ER RSOP Notification #04-08 is listed in Table 1

**Table 1**
**Potential Remediation Area for IHSS Group 400-1**

| IHSS Group | IHSS/PAC/UBC Site | PCOCs | Media | Estimated Remediation Volume |
|---|---|---|---|---|
| 400-1 | UBC 439 – Radiological Survey | Radionuclides, Metals, VOCs | Concrete and Subsurface soil | <100 cy |

VOC – volatile organic compound
cy – cubic yard

## 2.0 IHSS GROUP 400-2

IHSS Group 400-1 consists of UBC 439 – Radiological Survey The IHSS Group 400-1 is shown on Figure 2

### 2.1 Potential Contaminants of Concern

Potential contaminants of concern (PCOCs) at IHSS Group 400-1 are listed in Table 1 The PCOCs were determined based on process knowledge and data collected during previous studies (DOE 1992-2002, DOE 1992, DOE 1995, DOE 2001, and DOE 2003b)

## 2.2 Project Conditions

IHSS Group 400-1 consists of UBC 439 Building 439, which is approximately 100 feet by 50 feet, is a sheet metal structure built on an at-grade slab The building was a maintenance building, and later used for Property Utilization & Disposition operations Building 439 was used to receive, process, and ship surplus equipment and materials released by plant custodians Building 439 housed small portable counters to monitor alpha, beta, and gamma radiation Sources were controlled through the Site accountability procedures Smear samples collected throughout RFETS were brought to Building 439 for counting The building is currently being used as the break area for Building 440 operations personnel

The building has no process lines or foundation drains There is one floor drain that is tied to the sanitary sewer system The sewer line exits the building near the northwestern corner (Figure 2)

## 2.3 RFCA Subsurface Soil Risk Screen Evaluation

An SSRS is performed when non-radionuclides and uranium are present in the soil below 6 inches from the ground surface, when americium and plutonium are present below 3 feet from the ground surface, and for soil beneath below-grade structures Current site conditions are evaluated to determine if remediation is required by the SSRS The SSRS will be conducted again after the accelerated action and related characterization tasks are completed The accelerated actions taken, characterization results, and a revised SSRS will be documented in the IHSS Group 400-1 Closeout Report

**Screen 1 – Are contaminant of concern (COC) concentrations below RFCA Table 3 soil action levels for the Wildlife Refuge Worker (WRW)?**

Existing soil data, discussed in Industrial Area Sampling and Analysis Plan (IASAP) Addendum # IA-04-08 for IHSS Group 400-1 (DOE 2003b), do not indicate that there are contaminant concentrations that exceed RFCA WRW action levels (ALs) adjacent to the UBC However, characterization will be conducted under the building to determine if RFCA WRW ALs are exceeded

**Screen 2 – Is there a potential for subsurface soil to become surface soil (landslide and erosion areas identified on Figure 1)?**

IHSS Group 400-1 is not located in an area subject to erosion and landslides in accordance with Figure 1 of RFCA Attachment 5 (DOE et al 2003)

**Screen 3 – Does subsurface soil contamination for radionuclides exceed criteria defined in Section 5.3 and Attachment 14?**

Existing soil data, discussed in the IASAP Addendum for IHSS Group 400-1 (DOE 2003b), do not indicate that concentrations of radionuclides exceed RFCA WRW ALs However, characterization will be conducted under the building to determine if RFCA criteria are exceeded

**Screen 4 – Is there an environmental pathway and sufficient quantity of COCs that would cause an exceedance of the Surface Water Standards?**

Contaminant migration via erosion and groundwater are the two possible pathways whereby surface water could become contaminated from IHSS Group 400-1 soil or structures Run-off from IHSS Group 400-1 flows through Gauging Stations GS38 and GS39 along the Central Avenue Ditch (DOE 2003c) The nearest downgradient RFCA Surface Water Point of Evaluation (POE) is GS10 (DOE 2003c) This POE has had reported exceedances of water quality ALs, however, GS10 receives water from a large part of the IA, and surface water quality at this location may not be attributable to any single upgradient IHSS Group The potential for the IHSS Group to cause exceedances of surface water ALs will be re-evaluated based on the final characterization data

**Screen 5 – Are COC concentrations below RFCA Table 3 Soil Action Levels for Ecological Receptors?**

Existing soil data, discussed in the IASAP Addendum for IHSS Group 400-1 (DOE 2003b), do not indicate that there are contaminant concentrations that exceed RFCA ecological receptor ALs However, characterization will be conducted under the building to determine if RFCA ecological receptor ALs are exceeded

## 2.4 Remediation Plan

This RSOP Notification remediation plan for IHSS Group 400-1 includes the following objectives

- Remove the Building 439 concrete slab within 3 feet of the final grade in accordance with the RSOP for Facility Disposition (DOE 2000)

- Recycle the concrete slab in accordance with the RSOP for Recycling Concrete (DOE 2003d) or dispose the slab at an appropriate facility based on waste characterization results

- Remove soil with non-radionuclide or uranium contaminant concentrations greater than the RFCA WRW ALs to a depth of 6 inches If soil contamination greater than the ALs extends below 6 inches in depth, perform the SSRS to evaluate the need for further accelerated action

- Remove soil with plutonium-239/240 or americium-241 activities greater than the RFCA WRW AL to a depth of 3 feet, or to less than the applicable AL, whichever comes first If concentrations are greater than 3 nanocuries per gram (nCi/g) between 3 and 6 feet, characterize and remediate in accordance with RFCA Attachment 5 (DOE et al 2003) If plutonium-239/240 or americium-241 is present at activities greater than the RFCA WRW AL but less than 3 nCi/g below 6 feet, conduct an SSRS

- Consult with regulatory agencies if contaminant concentrations are greater than the ecological ALs but lower than the WRW ALs



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- If contaminated soil is removed, collect confirmation soil samples in accordance with the IASAP (DOE 2001)

It is anticipated that after remediation there may be areas with concentrations of metals, radionuclides, and organics greater than background means plus two standard deviations or detection limits, but below RFCA ALs

## 2.5 Stewardship Evaluation

This notification covers UBC 439 No IHSSs or PACs are included in this notification Based on the PCOCs (Table 1 and Section 2 1) and the ER RSOP (DOE 2003a), it is anticipated that all contamination above RFCA ALs will be remediated Figure 2 shows the potential remediation area (UBC 439)

If remediation is conducted, an additional stewardship evaluation will be performed during remediation using the consultative process and documented in a closeout report for IHSS Group 400-1 A new map of residual contamination will be generated after remediation The following sections present the stewardship evaluation

### 2.5.1 Proximity to Other Contaminant Sources

IHSS Group 400-1 is in the RFETS IA and is located close to other contaminant sources IHSS Group 400-2, which includes UBC 440, is located to the southwest of IHSS Group 400-1 IHSS Group 400-3, which includes UBC 444 and UBC 447, is located north of IHSS Group 400-1 IHSS Group 400-10, which includes PAC 600-161, is located southeast of IHSS Group 400-2

### 2.5.2 Surface Water Protection

Surface water protection includes the following considerations

***Is there a pathway to surface water from potential erosion to streams or drainages?***

Soil contaminants from IHSS Group 400-1 could migrate to surface water Runoff from the area is captured by the storm sewer system and flows northeast into the Central Avenue Ditch, which empties into South Walnut Creek

***Do characterization data indicate there are contaminants in surface soil?***

Existing soil data, discussed in the IASAP Addendum #IA-04-08 for IHSS Group 400-1 (DOE 2003b), do not indicate that there are contaminant concentrations that exceed RFCA WRW ALs However, additional characterization will be conducted to determine if RFCA WRW ALs are exceeded Additional characterization data will be documented in a data summary or closeout report

***Do monitoring results from Points of Evaluation (POEs) or Points of Compliance (POCs) indicate there are surface water impacts from the area under consideration?***

The nearest RFCA POE is GS10 (DOE 2003c), and exceedances of water quality ALs have been detected at this monitoring station However, this monitoring station receives



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water from a large part of the IA, and surface water quality at the monitoring station cannot be attributable to any single IHSS Group

***Is the IHSS Group in an area with high erosion potential, based on the 100-Year Average Erosion Map?***

IHSS Group 400-1 is not located in an area subject to erosion in accordance with Figure 1 of RFCA Attachment 5 (DOE et al 2003)

### 2.5.3 Monitoring

Monitoring includes the following considerations

***Do monitoring results from POEs or POCs indicate there are groundwater impacts from the area under consideration?***

One RFCA groundwater monitoring well is located near IHSS Group 400-1 P416789, which is located south of the IHSS Group This well is considered a plume definition well and contained uranium-233/234 and uranium-238 concentrations greater than the RFCA Tier II groundwater ALs However, concentrations of the two isotopes were well below background means plus two standard deviations (DOE 2002)

The Site plume location map (DOE 2002) indicates that IHSS Group 400-1 overlays the VOC plume, however, this plume is much larger than the IHSS Group and probably is attributable to multiple sources within the IA Further groundwater evaluation will be conducted as part of the groundwater plume remedial decision and future sitewide evaluation

***Can the impact be traced to a specific IHSS Group?***

Impacts cannot be definitively traced to IHSS Group 400-1

***Are additional monitoring stations needed?***

Not applicable at this time The need for and placement of monitoring stations will be re-evaluated in the Long-Term Stewardship Plan

***Can existing monitoring locations be deleted if additional remediation is conducted?***

Not applicable Existing wells monitor contamination from areas outside IHSS Group 400-1

### 2.5.4 Stewardship Actions and Recommendations

The current stewardship actions and recommendations for IHSS Group 400-1 are as follows

- Use Best Management Practices to reduce erosion into surface water drainage
- Implement near-term institutional controls until final closure and stewardship decisions are implemented, including the following
  - Fencing and signs to restrict access, and

  - Soil excavations controlled through the Site Soil Disturbance Permit process

- Implement long-term stewardship actions, including the following
  - Prohibitions on construction of buildings in the IA,
  - Restrictions on excavations or other soil disturbance, and
  - Prohibitions on groundwater pumping in the area of IHSS Group 400-1

These recommendations may change based on in-process remediation activities and other future RFETS remediation decisions

## 2.6 Accelerated Action Remediation Goals

ER RSOP remedial action objectives include the following

1 Provide a remedy consistent with the RFETS goal of protection of human health and the environment,

2 Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls, and

3 Minimize the spread of contaminants during implementation of accelerated actions

## 2.7 Treatment

Not applicable

## 2.8 Project-Specific Monitoring

High-volume air samplers may be used at the remediation area consistent with work controls to determine airborne radioactivity concentrations Approximate locations of air samplers are shown on Figure 2

## 2.9 Resource Conservation and Recovery Act (RCRA) Units and Intended Waste Disposition

Building 439 contains no RCRA units subject to RCRA closure requirements All accelerated action wastes will be managed in compliance with RCRA and Site waste management procedures

## 2.10 Administrative Record Documents

DOE, 1992 - 2002, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado, June

DOE, 1992, Final RFI/RI Work Plan for Operable Unit 12, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 1995, Operable Unit 12 Technical Memorandum No 2, Rocky Flats Environmental Technology Site, Golden, Colorado, February

DOE, 2000, RFCA Standard Operating Protocol for Facility Disposition, Rocky Flats Environmental Technology Site, Golden, Colorado, August

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, 2002, Second Quarter RFCA Groundwater Monitoring Report for Calendar Year 2002, Rocky Flats Environmental Technology Site, Golden, Colorado, November

DOE, 2003, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation Modification, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2003, Industrial Area Sampling and Analysis Plan FY04 Addendum #IA-04-08, Rocky Flats Environmental Technology Site, Golden, Colorado, November

DOE, 2003, Automated Surface-Water Monitoring Report, Water Year 2001, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2003, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, CDPHE, EPA, 2003, Modifications to the Rocky Flats Cleanup Agreement Attachment, U S Department of Energy, Colorado Department of Public Health and Environment, and U S Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado, June

### 2.11 Projected Schedule

Remediation of IHSS Group 400-1 is expected to begin in the third quarter of FY 04

## 3.0 PUBLIC PARTICIPATION

ER RSOP Notification #04-01 activities will be discussed at the January 2004 ER/Decontamination & Decommissioning Status meeting A PDF version of this notification was provided to the local governments This notification is available at the Rocky Flats Reading Rooms and on the Environmental Data Dynamic Information Exchange (EDDIE) website at www rfets gov

## 4.0 REFERENCES

DOE, 1992 - 2002, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado, June

DOE, 1992, Final RFI/RI Work Plan for Operable Unit 12, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 1995, Operable Unit 12 Technical Memorandum No 2, Rocky Flats Environmental Technology Site, Golden, Colorado, February

DOE, 2000, RFCA Standard Operating Protocol for Facility Disposition, Rocky Flats Environmental Technology Site, Golden, Colorado, August

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, 2002, Second Quarter RFCA Groundwater Monitoring Report for Calendar Year 2002, Rocky Flats Environmental Technology Site, Golden, Colorado, November

DOE, 2003a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation Modification, Rocky Flats Environmental Technology Site, Golden, Colorado, September

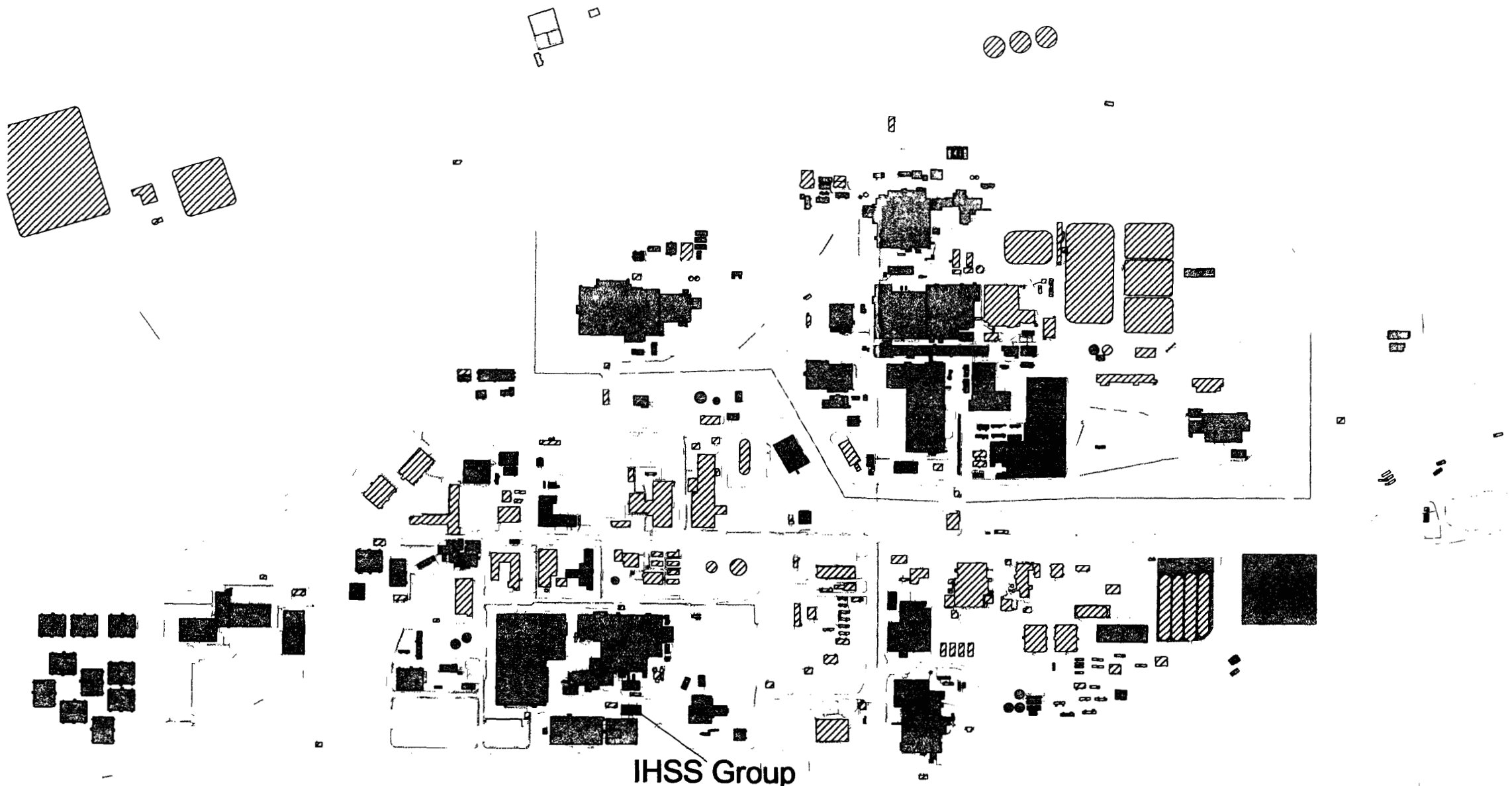
DOE, 2003b, Industrial Area Sampling and Analysis Plan FY04 Addendum #IA-04-08, Rocky Flats Environmental Technology Site, Golden, Colorado, November

DOE, 2003c, Automated Surface-Water Monitoring Report, Water Year 2001, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2003d, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, CDPHE, EPA, 2003, Modifications to the Rocky Flats Cleanup Agreement Attachment, U S Department of Energy, Colorado Department of Public Health and Environment, and U S Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado, June

# Figure 1
# IHSS Group 400-1
# Location Map




## KEY

- IHSS Group 400-1
- Demolished building
- Standing building
- Paved road



W E S

300 0 300 600 900 Feet

Scale = 1 8 000

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: [redacted]

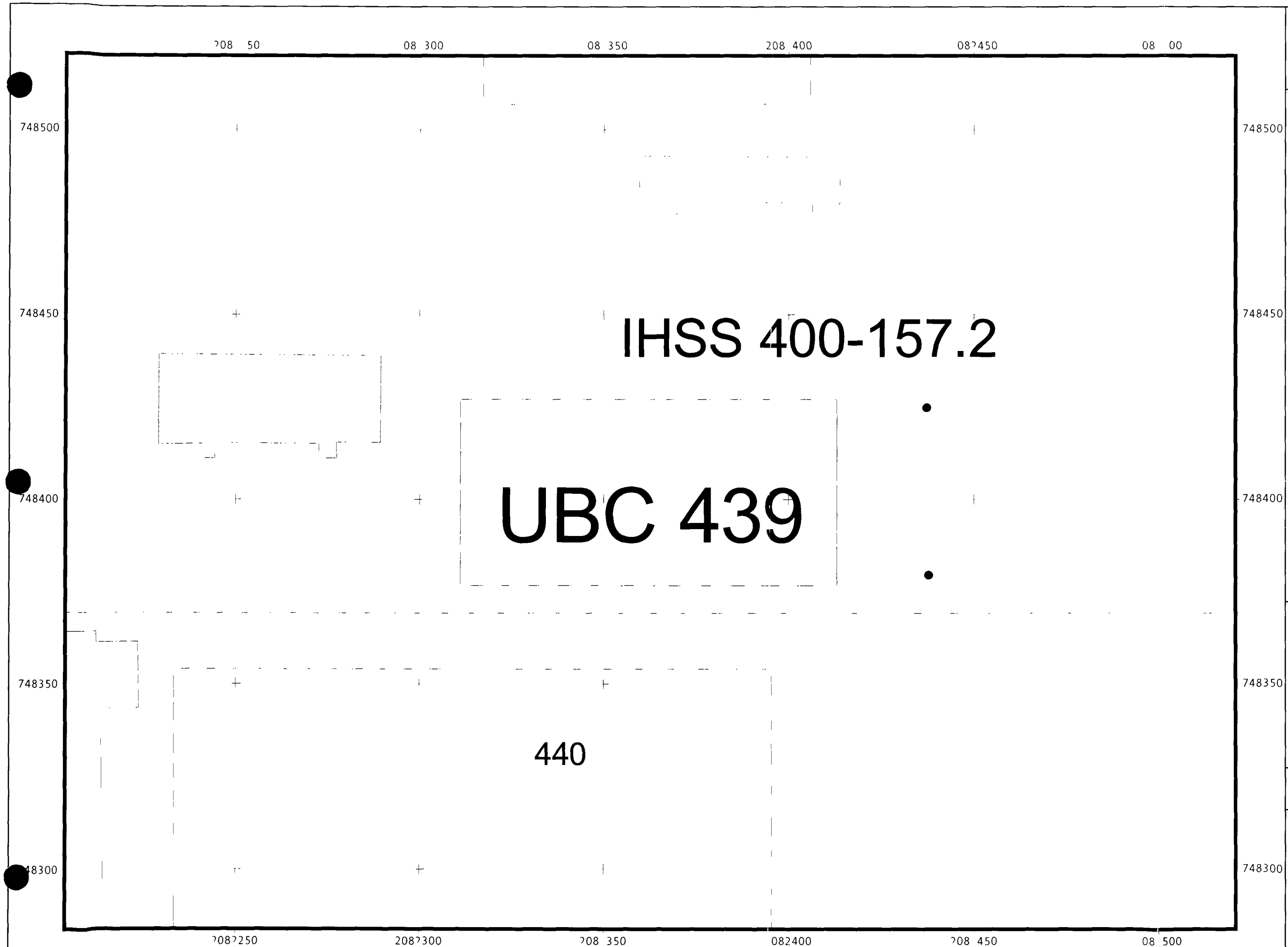
Prepared for

KAISER•HILL COMPANY

File w:\projects\2004\400-1\400-1 char apr

Date: 10/28/03

# Figure 2
# Potential Remediation Area
# IHSS Group 400 1




## KEY

- UBC 439
- IHSS 400 157 2
- Demolished building
- Standing buildling
- Approximate location of air sampler
- Storm drain
- Sewer line
- Paved area
- Fence

20 0 20 Feet

Scale 1 300

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by RADMS

Prepared for KAISER HILL

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